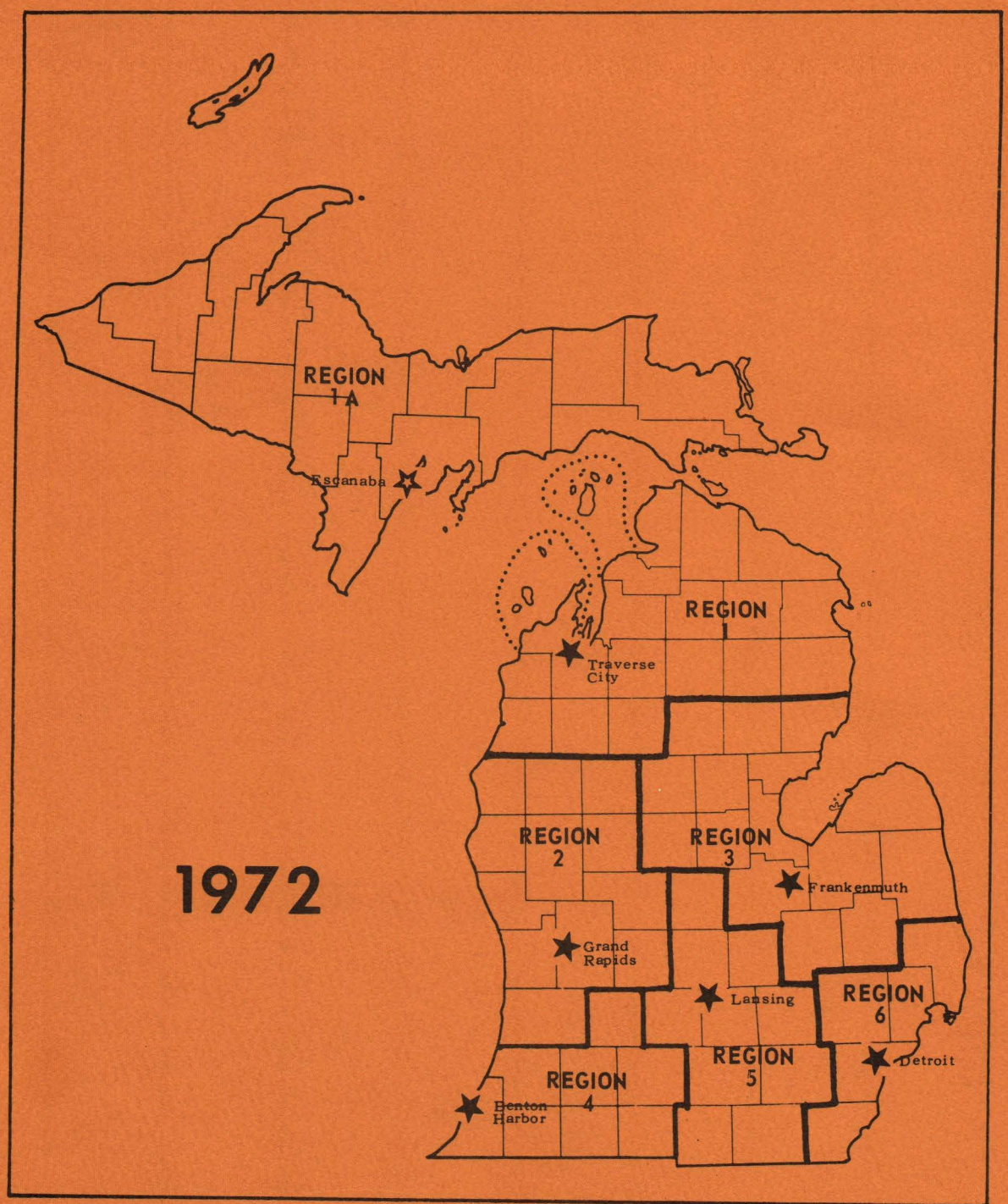
PEST CONTROL PROGRAMS



1972

MICHIGAN DEPARTMENT OF AGRICULTURE

B. Dale Ball, Director

Plant Industry Division

Dean F. Lovitt, Chief

F O R E W O R D

The Plant Industry Division has the primary responsibility of preventing the introduction and spread of plant pests. The programs reported herein are commensurate with that responsibility. They are supported by tax dollars made available by legislative appropriation. In addition, support comes from congressional appropriations through cooperation with the Animal and Plant Health Inspection Services, United States Department of Agriculture and Branch of Environment and Population Management, Bureau of Sport Fisheries and Wildlife, United States Department of the Interior.

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* Cooperative with Animal and Plant Health Inspection Services,
Plant Protection and Quarantine Program,
United States Department of Agriculture

** Cooperative with Branch of Enforcement and Population Management,
Bureau of Sport Fisheries and Wildlife,
United States Department of the Interior

APIARY INSPECTION

The detection and destruction of all colonies infected with American foulbrood disease is the primary function of the inspection service rendered by this division.

Utilizing 31 seasonal inspectors and four field supervisors 4,969 apiaries were visited and 66,493 colonies were inspected.

Disease was found in 49 of the 78 counties where inspection service was rendered. The 1,092 colonies infected with American foulbrood were destroyed by burning.

Whenever possible, inspections were made in areas having a history of disease. This approach to disease control accounted for an increase of 382 diseased colonies over 1971 despite the inspection of 4,269 fewer colonies.

The percentage of American foulbrood was 1.6 as compared to 1.0 in 1971. Disease percentage ranged from zero to 13.8 per county.

TABLE I

APIARY INSPECTION TOTALS

County	Apiaries Inspected 1971	Apiaries Inspected 1972	AFB Apiaries 1971	AFB Apiaries 1972	Colonies Inspected 1971	Colonies Inspected 1972	AFB Colonies 1971	AFB Colonies 1972
Alcona	28	29	0	0	552	579	0	0
Alger	--	--	--	--	--	--	--	--
Allegan	186	181	16	14	2,312	2,210	43	35
Alpena	22	22	0	0	295	290	0	0
Antrim	95	100	0	1	1,978	2,327	0	2
Arenac	26	43	1	0	512	673	1	0
Baraga	0	1	0	0	0	2	0	0
Barry	123	128	4	9	913	993	8	16
Bay	66	54	0	1	1,199	508	0	1
Benzie	39	36	6	4	764	588	16	7
Berrien	313	213	13	16	2,577	1,825	37	23
Branch	57	57	0	0	575	492	0	0
Calhoun	119	76	2	5	1,211	1,042	2	37
Cass	91	93	2	1	1,037	1,039	3	3
Charlevoix	80	75	6	0	1,585	1,583	25	0
Cheboygan	43	41	0	0	668	668	0	0
Chippewa	9	6	0	0	43	29	0	0
Clare	33	25	1	0	671	329	1	0
Clinton	62	42	1	2	675	930	1	5
Crawford	4	4	0	0	32	29	0	0
Delta	0	4	0	0	0	12	0	0
Dickinson	0	2	0	0	0	3	0	0
Eaton	61	52	8	3	660	597	29	15
Emmet	39	36	1	1	525	593	1	1
Genesee	129	157	6	11	1,647	1,555	7	30
Gladwin	34	46	3	0	679	711	3	0

County	Apiaries Inspected		AFB Apiaries		Colonies Inspected		AFB Colonies	
	1971	1972	1971	1972	1971	1972	1971	1972
Gogebic	0	3	0	0	0	23	0	0
Grand Traverse	66	80	4	3	1,341	1,573	6	3
Gratiot	22	57	0	0	409	1,087	0	0
Hillsdale	90	1	5	0	1,775	2	26	0
Houghton	0	3	0	0	0	23	0	0
Huron	60	85	0	3	1,805	2,124	0	12
Ingham	45	77	6	7	570	853	50	20
Ionia	156	8	12	0	2,172	200	28	0
Iosco	25	21	0	0	356	231	0	0
Iron	1	1	0	0	2	2	0	0
Isabella	94	68	5	5	1,809	1,355	7	8
Jackson	67	80	9	8	1,105	1,421	35	30
Kalamazoo	149	121	1	2	1,375	1,441	1	5
Kalkaska	22	34	1	2	564	910	3	9
Kent	218	147	13	10	2,479	2,067	20	17
Keweenaw	--	--	--	--	--	--	--	--
Lake	0	16	0	1	0	149	0	2
Lapeer	63	104	9	12	1,106	1,851	12	25
Leelanau	82	69	10	5	1,424	1,159	27	11
Lenawee	45	65	2	5	1,049	1,369	3	72
Livingston	74	125	3	30	1,991	3,410	12	236
Luce	4	3	0	0	78	43	0	0
Mackinac	1	1	0	0	6	1	0	0
Macomb	113	132	8	17	805	931	24	28
Manistee	30	49	1	0	517	714	1	0
Marquette	--	--	--	--	--	--	--	--
Mason	68	85	2	14	994	975	2	63
Mecosta	61	24	2	1	862	359	5	3
Menominee	24	0	0	0	235	0	0	0
Midland	94	87	3	2	864	589	3	2
Missaukee	25	19	1	0	399	393	1	0

County	Apiaries Inspected 1971	Apiaries Inspected 1972	AFB Apiaries 1971	AFB Apiaries 1972	Colonies Inspected 1971	Colonies Inspected 1972	AFB Colonies 1971	AFB Colonies 1972
Monroe	93	115	4	5	835	1,002	7	12
Montcalm	96	72	5	6	1,485	1,035	16	11
Montmorency	25	24	0	0	196	241	0	0
Muskegon	67	18	2	5	477	167	2	23
Newaygo	77	81	2	8	854	999	2	12
Oakland	263	305	21	33	3,042	3,188	40	92
Oceana	58	65	3	1	446	392	3	1
Ogemaw	28	20	0	0	532	293	0	0
Ontonagon	0	2	0	0	0	54	0	0
Osceola	22	31	0	4	504	522	0	14
Oscoda	8	7	0	0	79	73	0	0
Otsego	20	20	0	0	495	504	0	0
Ottawa	169	113	1	15	2,128	1,581	2	32
Presque Isle	8	9	0	1	45	52	0	1
Roscommon	10	9	0	1	87	46	0	6
Saginaw	108	93	1	2	1,211	775	1	14
Saint Clair	103	97	15	21	942	788	31	63
Saint Joseph	79	81	2	8	674	667	7	10
Sanilac	98	89	6	3	1,863	1,565	8	4
Schoolcraft	--	--	--	--	--	--	--	--
Shiawassee	53	56	5	1	1,127	1,562	14	16
Tuscola	116	111	10	2	2,056	1,690	24	2
Van Buren	166	122	37	15	2,003	1,251	82	30
Washtenaw	107	37	6	1	1,136	713	16	2
Wayne	90	259	6	10	444	1,634	12	25
Wexford	46	45	0	1	899	837	0	1
Total	5,268	4,969	293	338	70,762	66,493	710	1,092

TABLE II

COMPARISON OF APIARY INSPECTION PROGRAM 1962 - 1972

Year	Apiaries Inspected	Colonies Inspected	Apiaries AFB	Colonies AFB	Per Cent Colonies AFB
1962	7,211	76,219	371	881	1.15
1963	7,020	75,088	399	988	1.31
1964	5,643	66,318	353	820	1.23
1965	6,176	71,852	329	849	1.18
1966	5,956	69,966	289	658	.94
1967	5,648	68,456	306	880	1.28
1968	5,575	71,588	356	901	1.25
1969	5,547	77,395	371	984	1.27
1970	5,825	78,487	329	814	1.03
1971	5,268	70,762	293	710	1.00
1972	4,969	66,493	338	1,092	1.6

CHERRY FRUIT FLY CONTROL

Michigan has led the nation in production of tart cherries for several decades. The Plant Industry Division of the Michigan Department of Agriculture provides service to industry and ultimate consumers by promoting wholesomeness and good quality in cherry fruit produced for market. Cherry fruit flies, Rhagoletis cingulata and R. fausta, are serious pests in Michigan. The Plant Industry Division has developed procedures to detect and eliminate infestations and to intercept infested fruit before it enters the trade.

Each season, the division determines the earliest date of adult cherry fruit fly emergence in order that orchardists can be advised of the most effective time to apply recommended controls. In nature, cherry fruit flies winter as pupae in soil beneath tree hosts and begin to emerge as adult flies in late May or early June. Control recommendations are designed to suppress adult cherry fruit fly populations soon after emergence from the ground and before eggs are deposited in the ripening fruit. Screen cages erected over caches of infested fruit collected during the previous season are kept under observation at strategic locations. The date that adult flies first appear in emergence cages provides a basis for timing spray applications for cherry fruit fly control in Michigan. In 1972, adult flies first appeared on June 5 in the emergence cage maintained in Berrien County.

Orchards of all major cherry producers in Michigan are inspected by trained seasonal staff and pint samples of cherry fruit are picked from trees showing signs of neglect or inadequate insect control. Samples are tested by Plant Industry technicians for the presence of maggots. A low-speed blender is used to liberate maggots from infested fruit immersed in water. Gravity-decantation in a black bottomed pan isolates insect larvae from fruit pulp.

When samples are found to be infested with cherry fruit fly maggots, the extent of the infestation is determined by systematic sampling of orchards in which the samples originate. After infestations have been delimited, all fruit from infested trees is condemned. In addition, control orders are issued providing for the application of proper sanitation and treatment. If necessary, destruction of host trees is ordered to accomplish control.

Emergence cages have proved fairly reliable for establishing time of emergence for adults in experimental populations. Emergence cages will be maintained next season. Experimental flourescent yellow sticky-bag traps captured adult flies on June 5 in Jackson County. This was the earliest emergence recorded for natural populations in this county. Improved trapping techniques for detecting the earliest date of adult appearance in natural populations will be tested in 1973.

CHERRY FRUIT FLY ACTIVITY - 1972

County	Orchard Calls	Properties Inspected	Trees Inspected	Cherry Samples Tested	Trees Represented by CFF Infested Samples	Properties with CFF
Allegan	157	132	71,623	208	--	--
Antrim	376	162	250,520	752	12	2
Benzie	531	221	230,032	1,186	1,101	3
Berrien	1,191	823	285,353	845	2,402	55
Cass	54	38	19,851	42	--	--
Charlevoix	15	13	20,189	--	--	--
Cheboygan	26	7	4,424	85	--	--
Emmet	18	9	2,323	20	--	--
Grand Traverse	902	562	947,167	1,859	1,665	3
Ionia	7	1	6	23	--	--
Kalamazoo	2	2	2,350	3	--	--
Kalkaska	7	2	67	2	--	--
Kent	456	227	59,145	544	212	3
Leelanau	856	701	1,069,748	1,926	1,242	1
Manistee	486	165	206,363	352	15	1
Mason	142	112	104,727	63	30	2
Mecosta	22	17	36,252	71	--	--
Montcalm	6	9	1,508	22	--	--
Muskegon	12	12	24,033	39	--	--
Newaygo	50	33	21,108	165	--	--
Oceana	631	432	602,531	1,049	736	13
Ottawa	35	35	19,266	139	--	--
Van Buren	266	235	133,357	285	2,521	14
Total	6,248	3,950	4,111,943	9,680	9,936	97

NEGLECTED ORCHARD AND VINEYARD REMOVAL

In recent years, many factors have contributed to the increase of abandoned fruit trees and grape vineyards; inflated farm values resulting in subdivision of these lands and retention of uncared for trees and vineyards; neglect of small family farm holding; change in fruit varieties and orchard locations; and the economic necessity to withhold spray control measures because of the reduction of crop prices.

Act No. 72, Public Acts of 1945, enabled this division to inaugurate a much needed program for the removal of neglected orchards and vineyards throughout the fruit growing areas of Michigan. It has provided relief of the serious problem confronting the commercial fruit grower whose orchard or vineyard is in close proximity to one that has been neglected and pest infested.

Experience has shown that obtaining removals through legal procedures proves to be less effective and much more expensive than actual removal with State funds.

During this past year, 104,482 trees were removed by the State.

ORCHARD REMOVAL PROJECT - 1972

County	Orchard Insp.	Other Orchard Calls	Number of Apple Trees Insp.	Number of Apple Trees Removed	Number of Pear Trees Insp.	Number of Pear Trees Removed	*Number of Peach Trees Insp.	*Number of Peach Trees Removed	Number of Cherry Trees Insp.	Number of Cherry Trees Removed	Number of Plum Trees Insp.	Number of Plum Trees Removed	Total Removed By State
Allegan	35	66	6366	5716	12158	12108	2150	2040	1616	1616	156	156	21636
Antrim	2	--	--	--	--	--	--	--	240	240	900	900	1140
Benzie	8	4	1	1	--	--	2	2	1195	1161	301	301	1465
Berrien	130	241	17213	16403	9259	9047	8685	8542	6357	6346	2473	2343	42681
Grand Traverse	5	4	1570	1570	--	--	--	--	1297	1144	--	--	2714
Kent	1	1	--	--	--	--	--	--	52	52	20	20	72
Leelanau	8	9	1628	1628	2	2	72	72	7489	7489	265	265	9456
Manistee	3	2	--	--	--	--	--	--	1303	1303	--	--	1303
Mason	1	--	--	--	--	--	--	--	775	775	--	--	775
Oceana	5	11	47	47	4	4	40	40	2293	2293	--	--	2384
Van Buren	47	88	15165	15067	1371	1371	2339	2339	1750	1746	333	333	20856
Total	245	426	41990	40432	22794	22532	13288	13035	24367	24165	4448	4318	104482

*Number inspected other than noted in Peach Virus inspection data

OAK WILT DISEASE CONTROL

Oak wilt disease control for 1972 was carried out in the same manner as in previous years. Suspect trees were located by aerial survey and visited on the ground to determine if infection was present. If infection was present, the consent of the property owner was obtained so the trees could be killed by deep girdling and treatment with a 2,4-D herbicide. Artificial killing is used to prevent tree-to-tree spread through inter-connecting root systems and also to prevent spore mat formation. Insect feeding on spore mats is thought to re responsible for long distance spread of oak wilt.

This year, eleven complete counties were surveyed plus Grosse Ile and a portion of Grand Traverse County. Of these, six were surveyed last year while the other five had not been surveyed for several years. The more heavily infected counties in Southwestern Michigan are surveyed annually and the remaining counties are surveyed on a three or four year rotation.

Infected trees were found at 34 locations, 31 of which were located in Southwestern Michigan. The number of locations was approximately the same as in 1971, but the number of infected trees was up from 62 to 74.

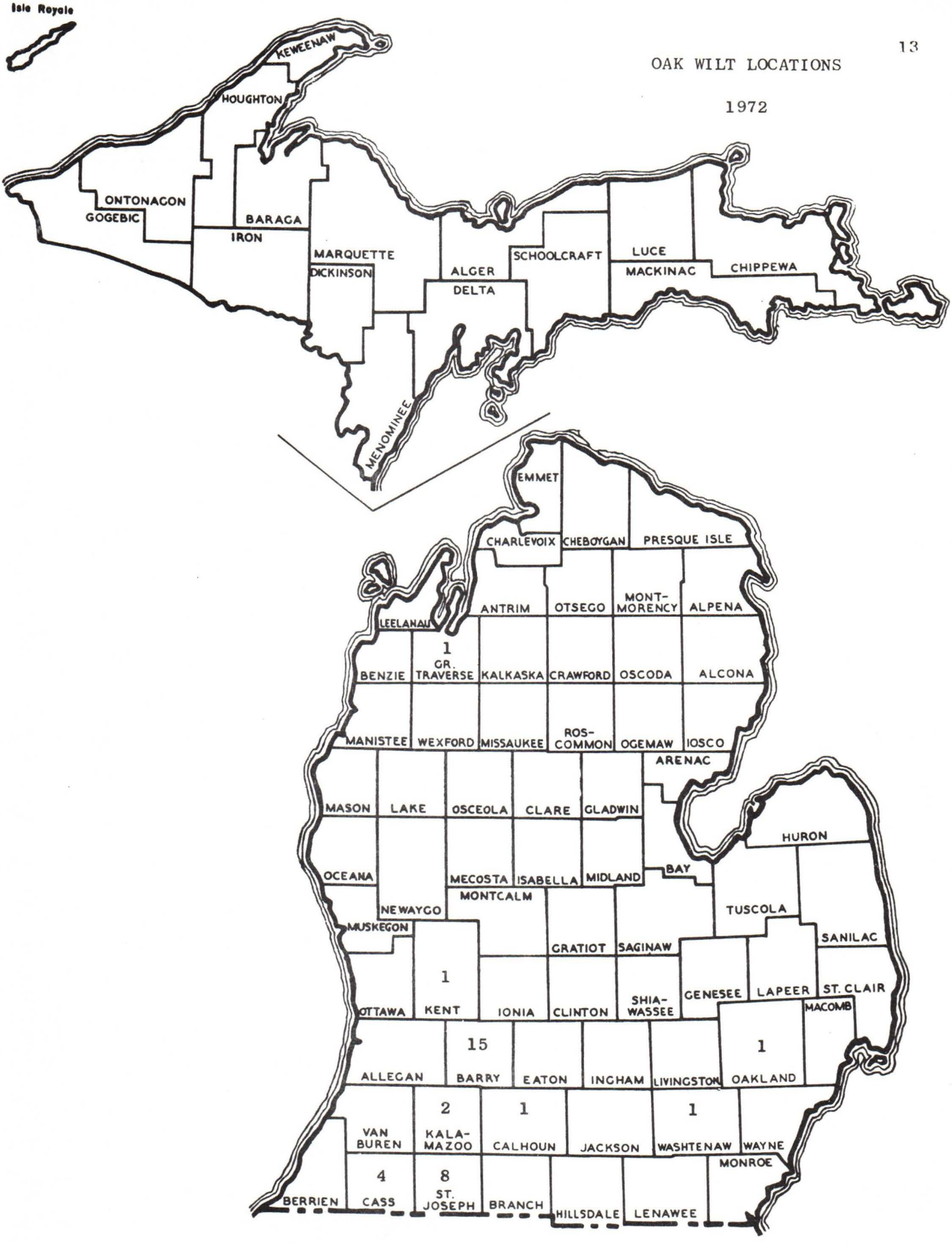
Although the number of infection sites and diseased trees remains relatively low, continued attention must be given to survey and control treatment so that a disease build-up does not occur.

Counties in which oak wilt was found in 1972:

Barry	15 locations
Calhoun	1 location
Cass	4 locations
Grand Traverse	1 location
Kalamazoo	2 locations
Kent	1 location
Oakland	1 location
Saint Joseph	8 locations
Washtenaw	1 location

OAK WILT LOCATIONS

1972



OAK WILT DISEASE CONTROL

TABULATION OF SURVEY DATA

Year	New Locations of Oak Wilt	Old Locations with Newly Infected Trees	Total Trees Infected	Number of Adjacent Healthy Trees Frilled and Killed
1956	84	52	256	1,140
1957	65	30	212	668
1958	49	25	126	521
1959	31	19	85	300
1960	36	25	113	340
1961	10	18	54	149
1962	10	6	45	141
1963	8	6	23	102
1964	8	13	110	143
1965	3	10	56	36
1966	3	8	21	86
1967	14	15	54	306
1968	17	18	58	394
1969	28	11	81	102
1970	23	14	62	76
1971	18	15	62	184
1972	19	13	74	165

PEACH ORCHARD INSPECTION

Twenty seasonal inspectors were utilized on this project from July 17 through August 25 inspecting 1,130,766 peach trees and condemning 432 trees for a .038 percent virus infection. This is the lowest incidence of virus disease that has been reached by the department since the enactment of Act No. 72 in 1945. In addition to this low virus infection, inspectors encountered several unusual conditions while working on this project.

As a result of the extremely low temperatures that occurred during the month of January, inspectors noted considerable amounts of winter damage throughout the peach-growing area and extremely heavy damage in the fringe areas with growers removing large blocks of trees.

Not only did the January freeze kill many trees, it also killed all the fruiting buds in Berrien, Cass and Van Buren counties. With this crop failure, many growers did not cultivate or mow their orchards; thus, inspectors, in many instances, walked through thick, six-foot high weeds that were often covered with heavy dew.

With diseased chokecherry bushes being the only known source of X-disease threat to peach trees, inspectors spent a considerable amount of time scouting and marking all chokecherry bushes within approximately 200 feet of all peach orchards. Healthy and diseased chokecherry bushes were found throughout the peach-growing areas of

Southwest Michigan, with the heaviest concentration noted in Oronoko and Hartford townships of Berrien and Van Buren counties respectively. Chokecherry bushes varied in size from a 3-inch seedling to a 30-foot high, 6-inch trunk diameter tree.

Another first on this project was the completion of all inspections in Berrien, Cass and Van Buren counties. In addition, inspectors completed approximately 90 percent of all the inspections in Allegan County.

The tables on the following pages summarize the results of the peach orchard inspections for 1972.

PEACH TREE ORCHARD INSPECTIONS 1972

Counties and Townships	Orchard Inspections	Other Orchard Calls	Peach Trees Inspected	Peach Trees Diagnosed As Virus Infected		Total Virus Infected Trees	Properties Infected
				Littles	Rosette Mosaic		
Allegan							
Casco	59	64	60,123	38	0	38	11
Clyde	1	1	900	0	0	0	0
Ganges	69	75	53,356	53	0	53	44
Laketown	9	12	1,055	1	0	1	1
Manlius	14	18	10,266	22	0	22	4
Saugatuck	17	18	10,614	5	0	5	5
Total	169	188	136,314	119	0	119	65
Berrien							
Bainbridge	244	122	201,213	10	0	10	3
Baroda	13	5	14,247	0	0	0	0
Benton	147	97	111,690	11	9	20	6
Berrien	43	12	42,130	6	1	7	4
Bertrand	2	0	129	0	0	0	0
Buchanan	7	1	3,077	4	0	4	1
Coloma	98	28	93,665	12	0	12	4
Galien	3	2	4,847	0	0	0	0
Hagar	79	23	58,430	11	0	11	4
Lake	5	2	30	0	0	0	0
Lincoln	27	12	5,602	3	0	3	1
Niles	3	0	385	0	0	0	0
Oronoko	108	69	92,935	10	0	10	3
Pipestone	58	22	43,429	3	0	3	1
Royalton	49	21	12,907	4	7	11	2
St. Joseph	19	5	4,581	0	0	0	0
Sodus	57	25	37,730	0	6	6	1
Watervliet	9	5	6,249	0	0	0	0
Weesaw	19	4	9,063	0	1	1	1
Total	990	455	742,339	74	24	98	31

Peach Tree Orchard Inspections 1972, continued

Counties and Townships	Orchard Inspections	Other Orchard Calls	Peach Trees Inspected	Peach Trees Diagnosed As Virus Infected		Total Virus Infected Trees	Properties Infected
				Littles	Rosette Mosaic		
Cass							
Howard	1	1	2,200	0	0	0	0
Jefferson	1	0	250	0	0	0	0
Pokagon	1	1	810	0	0	0	0
Silver Creek	14	10	7,532	8	0	8	2
Total	17	12	10,792	8	0	8	2
Van Buren							
Almena	5	5	2,054	3	0	3	1
Antwerp	8	7	3,490	1	0	1	1
Arlington	18	18	21,100	1	0	1	1
Bangor	15	19	8,361	4	0	4	3
Bloomingdale	9	8	8,276	0	0	0	0
Columbia	9	8	2,527	3	0	3	1
Covert	23	16	6,567	4	0	4	2
Geneva	12	8	8,873	0	0	0	0
Hamilton	1	1	3,195	0	0	0	0
Hartford	43	48	74,922	3	0	3	2
Keeler	28	87	40,320	172	0	172	4
Lawrence	31	27	40,383	0	0	0	0
Paw Paw	17	18	11,264	0	0	0	0
Pine Grove	4	2	1,909	0	0	0	0
Porter	4	4	1,164	0	0	0	0
South Haven	17	16	6,916	16	0	16	5
Total	244	292	241,321	207	0	207	20
Grand Total	1,420	947	1,130,766	408	24	432	118

SPECIAL FRUIT STOCK CERTIFICATION

Special fruit stock certification is one of the ways the department assists nurserymen in providing fruit growers with disease free fruit trees or plants. Routine nursery inspection eliminates visibly diseased stock and the peach virus inspection eliminates visible virus diseases from peach propagation wood. There remains, however, a group of diseases called latent viruses. Generally, these are not seen but they exert their influences upon the tree or plant in a subtle manner by reducing yields, fruit quality, plant growth, longevity, etc. By the time a fruit grower is aware the plant is being affected, much time and production may be lost.

This department works with nurseries by providing virus-free propagating materials and also supervises propagation blocks at nurseries to assure they remain virus-free. In 1972, over 1,500 trees and plants were indexed to confirm virus-freedom and 135,700 virus-free fruit buds and plants were distributed for propagation purposes.

THE MICHIGAN SEED LAW

The Michigan Seed Law is primarily a correct labeling law. It requires all agricultural, vegetable, flower and herb, and forest tree seeds to be labeled with specific information when being offered for sale, except for a few specified exemptions.

The labeling for agricultural seeds must be complete. Simplified labeling is provided for vegetable seed that meets prescribed germination standards.

Special labeling is on seed of any kind, which has been treated with an application of a substance or a process to reduce, control or repel certain disease organisms, insects, or other pests, must be labeled to show that the seed has been treated; the common, coined, chemical, or abbreviated chemical name of the substance applied; and a caution statement in 12 point type as follows: "POISON TREATED -- Do not use for food, feed, or oil purposes." If the material is a mercurial or similar toxic substance, the word "poison" or "poison treated" and the skull and cross-bones must appear in red on a background of distinctly contrasting color.

The law further provides that the Michigan Department of Agriculture must make available a seed testing service for individuals needing labeling information on purity or germination of a lot of seed prior to offering it for sale.

Table I reflects the fees charged for seed analysis, and the size of sample needed for the more common seeds planted in Michigan.

For germination only, send at least 400 seeds. If a purity or noxious weed analysis is required, the submitted sample should provide the "working weight" of seed as specifiec by kinds in the Association of Seed Analyst's Rules for Testing Seeds Manual.

Fee for mixtures will be determined by totaling the fees of the ingredients in the mix but not to exceed $15.00.

Fee for special determinations, (Tetrazolium, Cold Test, Soil or Sand, Embryo Excision) will be charged at $3.00 per hour for analyst's time.

Fees are payable in advance or must accompany the sample. Remittance should be by money order or check to State of Michigan. Sending currency in a sample is not advisable.

To avoid delay in processing or loss of sample, the following is advisable:

1. Send the sample in a container strong enough to withstand the mails.

2. Attach or enclose with the sample information stating kind of seed and lot identification.

3. Specify the test desired; purity, germination or both.

4. Identify the sample with your name and address.

5. Address the sample to:

SEED SECTION
MICHIGAN DEPARTMENT OF AGRICULTURE
LEWIS CASS BUILDING
LANSING, MICHIGAN 48913.

The seed testing service, maintained by the Michigan Department of Agriculture, was utilized extensively during the past fiscal year.

Many farmers, elevators, seed companies and others, requiring information regarding the quality of seed they intended to sow, sell, buy, process or label, submitted representative samples of their seed requesting the tests they desired.

In September of 1971, the Commission of Agriculture established the policy "That enforcement seed samples shall have priority over service samples from March 15 to October 1 of each calendar year, except that enforcement sample priority for dry beans shall be from April 15 to October 1."

Cooperation, therefore, is requested from farmers and seedsmen submitting samples for service testing to submit them will in advance of these dates. This will assure prompt action and report of analysis.

Included in the 2,400 field seed samples analyzed were 923 samples of white pea beans for blight detection testing. The total of samples analyzed for seed factors other than blight was 2,566. Of this number, 232 samples or 10 percent were found unfit for legal sale due to low germinations or noxious weed content. It is estimated approximately only five percent of the seed lots submitted could be classed as unfit for legal sale since in most cases the cleaning and processing was done after receiving the required test information.

The 923 samples of white pea beans for blight detection testing were processed in cooperation with the Pathology Section. Of this number, 258 samples or 28 percent were found to carry bacterial blight.

Field Seeds - includes alfalfa, clovers, timothy, cereal grain, beans, soybeans, etc.

Chaffy Grasses - includes brome grasses, orchardgrass and similar types.

Turf Grasses - includes bluegrasses, fescues, ryegrasses, redtop and bentgrasses.

Lawn Mixtures - includes mixtures of two or more kinds listed under turfgrasses.

Pasture Mixtures - includes mixtures of two or more kinds, smaller legumes, chaffy or turfgrasses.

Vegetable Seed - includes kinds commonly grown in gardens or on truck farms.

Flower, Herb and Tree - includes kinds usually grown for decorative, aromatic or medicinal purposes, or in nurseries or forests.

In Table IV, all Michigan seed dealers and all out-of-State dealers conducting business in the State are represented in the total of 2,494 seed samples taken from lots of various seed kinds offered for sale in all areas of the State and analyzed during the 1971-1972 fiscal year.

During the year, there was broad and consistent inspection coverage by the Plant Industry Division inspection staff. Many samples of large lots were taken early at the warehouse and wholesale level prior to dispersal for sale. Relatively fast action on lots found in violation resulted in dealers replacing those lots or taking action to correct the violation so legal sale of the seed could proceed. Inspectors also conducted a continual check of seed lots at the retail level.

Serious violations with field seed occurred largely from germination claims considerably in excess of actual germination performance or the occurrence of prohibited or restricted noxious weeds beyond allowable limits. More precise and careful processing of seed lots would eliminate most of the noxious weed violations. More care in storage and shipping and more cautious claims on viability would eliminate many of the germination violations.

Serious violations with turf grasses occurred primarily from germination claim in excess of performance and secondly from pure seed below claim or excess inert. This would indicate the need for more care and caution with this kind in storing, shipping and labeling and in addition, with some lots, more care in blending, bagging or packaging.

Serious violations in lawn seed mixtures occurred largely where the percent of pure seed ingredients claimed varied considerably with percent of pure seed ingredients found or where there was low germination, usually of an item occurring as a small percentage of the pure seed. Many firms consistently year after year prepare and market this difficult blend with no, or a minimum of, violation difficulty. It is clear, therefore, that seed kinds falling off in germination should not be used in this type mixture and success lies with a controlled and careful blending process.

Serious violation in flower, herb and tree kinds are due to germination below claim or as established in the regulations. All of the violations occurred in seed packets or specialty offerings. The problem is probably equally due to harvesting and packaging in some instances or storage exposure at the retail level in others.

All violations regardless of degree are tabulated and reported. In some cases, frequency of occurrence of minor or technical violations by a firm may point to a casual or careless operation. Until investigation, it is often impossible to determine if a seed

name has been deliberately shortened or misspelled to mislead the seed buyer or is simply an error in labeling. Does the omission of a test date indicate the seed is old or has never been tested or merely that an oversight in labeling has occurred? Frequent violations of a minor or technical nature by a given firm would be considered serious violation of the law.

The Michigan Department of Agriculture cooperates with the United States Department of Agriculture in enforcement of the Federal Seed Law. In that cooperative agreement, the department is required to provide the officers of the Federal Seed Act with all samples and test information on seed lots where Federal action is deemed necessary.

TABLE I

Kind of Seed	Sample Size Required Weight	Approx. Vol.	Purity and/or Noxious Weed Analysis	Germination Test	Purity & Germ.	Max. Days Required for Germ.
Alfalfa	4 oz	1/2 pint	$1.50	$1.50	$3.00	7
Barley	20 oz	1-1/2 pint	1.50	1.50	3.00	7
Beans	20 oz	1-1/2 pint	1.50	1.50	3.00	8
Bean Blight Test	5 lbs	6 pints	10/15-12/15-$5.00 — 12/15-10/14-$15.00			28
Bent Grass	2 oz	1/4 pint	2.50	2.50	5.00	28
Blue Grass	2 oz	1/4 pint	2.50	2.50	5.00	28
Brome Grass	8 oz	1 pint	2.50	2.50	5.00	14
Buckwheat	20 oz	1-1/2 pint	1.50	1.50	3.00	7
Canary Grass	4 oz	1/2 pint	2.50	2.50	5.00	21
Clovers	4 oz	1/2 pint	1.50	1.50	3.00	7
Corn	20 oz	1-1/2 pint	1.50	1.50	3.00	7
Flax	8 oz	1/2 pint	1.50	1.50	3.00	7
Flower Seed	--	--	1.50	1.50	3.00	7-30
Lespedeza	4 oz	1/2 pint	1.50	1.50	3.00	14-21
Millet	4 oz	1/2 pint	1.50	1.50	3.00	7-14
Oats	20 oz	1-1/2 pint	1.50	1.50	3.00	10
Orchard Grass	4 oz	1/2 pint	2.50	2.50	5.00	21
Peas, Field	20 oz	1-1/2 pint	1.50	1.50	3.00	8
Rape	4 oz	1/2 pint	1.50	1.50	3.00	7
Red Top	2 oz	1/4 pint	2.50	2.50	5.00	10
Red Fescue	4 oz	1/2 pint	2.50	2.50	5.00	21
Rye	20 oz	1-1/2 pint	1.50	1.50	3.00	7
Rye Grass	8 oz	1/2 pint	1.50	1.50	3.00	14
Sorghum	20 oz	1-1/2 pint	1.50	1.50	3.00	10-21
Sudan Grass	8 oz	1 pint	1.50	1.50	3.00	10
Sunflower	8 oz	1 pint	1.50	1.50	3.00	7
Tall Fescue	8 oz	1/2 pint	2.50	2.50	5.00	14
Timothy	4 oz	1/2 pint	1.50	1.50	3.00	10

TABLE I (continued)

Kind of Seed	Sample Size Required Weight	Approx. Vol.	Purity and/or Noxious Weed Analysis	Germination Test	Purity & Germ.	Max. Days Required for Germ.
Trefoil	4 oz	1/2 pint	$1.50	$1.50	$3.00	12
Tree Seed	--	--	2.50	2.50	5.00	10-28
Vetch	20 oz	1-1/2 pint	1.50	1.50	3.00	14
Wheat (Speltz)	20 oz	1-1/2 pint	1.50	1.50	3.00	7
Vegetables	--	--	1.50	1.50	3.00	7-28
Mixtures:						
Field Seeds	4 oz	1/2 pint	--	--	--	7-14
Grain	20 oz	1-1/2 pint	--	--	--	7
Lawn	4 oz	1/2 pint	--	--	--	7-28

TABLE II

SUMMARY OF SERVICE SAMPLE ANALYSIS
Fiscal Years 1969-1972

Year	Number Samples	Purity and/or Germination	Purity Only	Germination Only	Special Sod Growers Test	Noxious Exam.	Total Germination
1969-1970	3,436	913	112	2,404	--	1,026	3,692
1970-1971	3,240	884	95	3,287	--	976	3,498
1971-1972	3,097	925	44	2,114	14	--	3,337

TABLE III

SUMMARY OF SERVICE SAMPLE ANALYSIS
Fiscal Year 1971-1972

Type Sample	Number Samples	Purity and Germination	Purity Only	Germination Only	Special Sod Growers Test	Total Number Germination
Field	2,400	741	34	1,625	--	2,366
Chaffy	46	17	1	28	--	45
Turf	206	76	4	112	14	188
Lawn Mixture	84	39	1	44	--	283
Pasture Mixture	105	52	4	49	--	199
Vegetable and Herb	167	--	--	167	--	167
Flower and Tree	89	--	--	89	--	89
Total	3,097	925	44	2,114	14	3,337

TABLE IV

SUMMARY OF OFFICIAL SEED INSPECTION AND ANALYSIS
Fiscal Year 1971-1972

Type of Seed	Samples Examined	Samples Passed	%	Total	%	Serious*	%	Minor**	%	Technical+	%
Field	1,291	1,189	92	102	8	60	5	9	1	33	2
Chaffy	55	50	91	5	9	2	4	2	4	1	1
Turf	480	432	90	48	10	31	6	10	2	7	2
Lawn Mixtures	221	185	84	36	16	16	6	18	8	4	2
Pasture Mixtures	80	64	80	16	20	3	4	8	10	5	6
Vegetable	262	253	97	9	3	5	2	1	0	3	1
Flower, Herb and Tree	105	92	88	13	12	13	12	0	0	0	0
Total	2,494	2,265	91	229	9	128	5	48	2	53	2

TABLE V

SUMMARY OF OFFICIAL SEED INSPECTION AND ANALYSIS
Fiscal Years 1969-1972

Year	Samples Examined	Samples Passed	Technical Violation	%	Minor Violation	%	Serious Violation	%
1969-1970	2,782	2,446	79	3.8	111	5.3	146	5.2
1970-1971	1,775	1,655	82	4.8	10	1.8	231	13.0
1971-1972	2,494	2,265	53	2.0	48	2.0	128	5.0

*, **, + Key on page 31

KEY to TABLE IV and TABLE V found on page 30

* Serious Violation - Cases of gross mislabeling and where low germination, high weed content, prohibited or restricted noxious weeds or high inert content seriously affect the seed quality.

** Minor Violation - Cases where slight variation from claim after tolerance accrues (except in case of low germination or excess noxious weed content) not seriously affecting seed quality.

+ Technical Violation - Cases in which seed quality is not involved, such as improper or incomplete kind names, omissions and slight errors on label.

BARBERRY ERADICATION

Surveys for rust-susceptible barberry bushes were conducted in Allegan, Baraga, Berrien, Calhoun, Charlevoix, Clinton, Delta, Ingham, Ionia, Jackson, Kalamazoo, Kent, Leelanau, Marquette, Mason, Oakland, Saginaw, Saint Clair, Saint Joseph, Tuscola, Washtenaw and Wexford counties.

A total of 60 square miles was inactivated leaving 511 square miles still active in the State. This area contains 2,511 active barberry properties and represents approximately .9% of the original area that required re-work.

This year, 545 rust-susceptible barberry bushes were destroyed.

A total of 303 rust checks were made throughout the State to determine the incidence of stem and leaf rust on small grains. Only trace amounts of rust were found.

Nineteen nurseries were checked for regulatory compliance relative to the Black Stem Rust Quarantine.

CEREAL LEAF BEETLE

SURVEY

Cereal leaf beetle surveys were conducted in the Upper Peninsula in Chippewa, Mackinac and Luce counties during the week of July 10-14. A total of 118 survey stops were made by the three two-man crews. Most of the available oat fields were carefully checked both visually and by sweeping where conditions permitted. The oat crop was in ideal stage of development for survey. Larvae were detected in Sections 30 and 36, Soo Township, and in Section 15, Bruce Township, Chippewa County. A single larva was found in Marquette Township, Mackinac County.

An intensive survey by a six-man crew of fields immediately adjacent to the 1971 finds in Dafter Township, Chippewa County proved negative.

Spot checks were also made in Schoolcraft, Delta, Menominee and Dickinson counties.

REGULATORY

Growers and shippers of Scotch, red and Austrian pine Christmas trees were required to apply commodity treatments to their

trees before they could be shipped to states requiring certification. Commodity treatments included dipping or spraying with a Lindane solution or fogging trees under plastic sheeting with Lindane. In 1972, there were 1,873 Christmas tree shipments that required certification. This involved the treatment of 1,338,581 trees.

GYPSY MOTH ERADICATION

In 1971, State foresters reported more than 1,000,000 oak 9,000 Eastern hemlock, and 8,000 white pine were killed as the direct result of a three-year gypsy moth infestation in the Newark, New Jersey, watershed. This year, gypsy moth caterpillars defoliated an estimated 1,361,500 acres of woodland in nine Northeastern states.

In recent years, gypsy moths have begun to spread beyond the infested Northeast. This spread, in many cases, is a direct result of egg masses being carried on recreational vehicles.

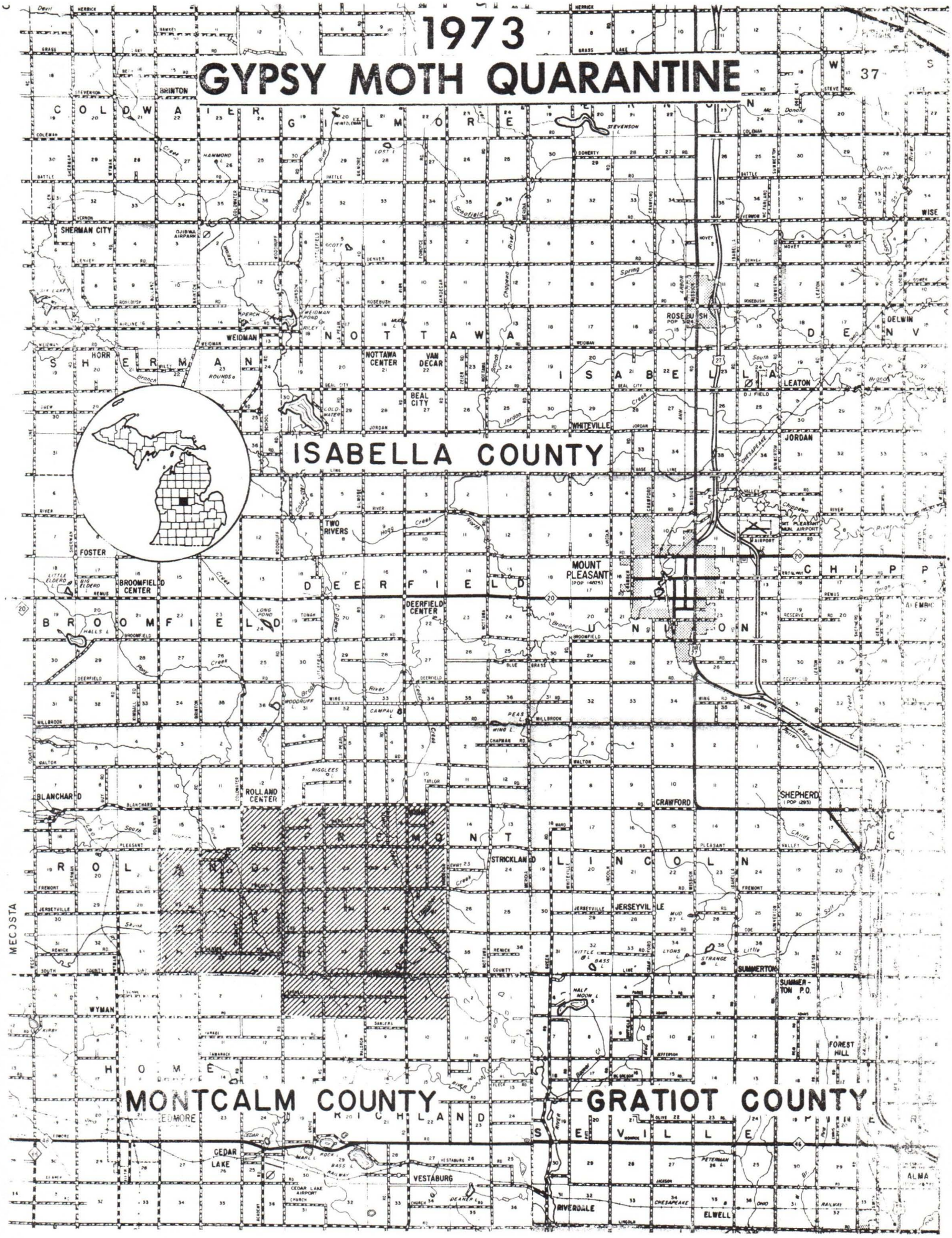
Nearly 4,000 traps were set in Michigan this year. The traps, baited with Disparlure, were set one per nine square miles in the Southern half of the lower peninsula and one every five miles along the major highways in the Northern half of the lower peninsula.

Personnel from the Department of Natural Resources placed 200 traps in State Parks and rest areas and United States Forest Service personnel set 39 traps in United States Forest campsites.

Male moths were caught in traps at four locations, one in Bay County, one in Mecosta County and two in Isabella County. Through property owner contacts made in November, an area of approximately 39 acres in Fremont Township, Isabella County, was found to be heavily infested with egg masses. An organized egg mass survey was conducted

in Isabella County by State and Federal personnel in December. Nine sections in Fremont and Rolland Townships were found to be infested.

As a result of these findings, we anticipate an area of thirty square miles to be placed under quarantine which will restrict the movement of regulated articles from these areas until properly certified by visual inspection or until an approved commodity treatment is made. Plans were also formulated to apply an eradication treatment to the infested area.


1973
GYPSY MOTH QUARANTINE
ISABELLA COUNTY
MONTCALM COUNTY
GRATIOT COUNTY
SHERMAN CITY
WEIDMAN
NOTTAWA CENTER
VAN DECAR
BEAL CITY
WHITEVILLE
ROSEBUSH
LEATON
JORDAN
TWO RIVERS
FOSTER
BROOMFIELD CENTER
DEERFIELD CENTER
MOUNT PLEASANT
(POP. 14075)
MT. PLEASANT MUN. AIRPORT
BLANCHARD
ROLLAND CENTER
CRAWFORD
SHEPHERD
(POP. 1295)
JERSEYVILLE
SUMMERTON
SUMMERTON P.O.
FOREST HILL
WYMAN
CEDAR LAKE
CEDAR LAKE AIRPORT
VESTABURG
RIVERDALE
ELWELL
ALMA
MECOSTA

JAPANESE BEETLE

A systematic trapping survey was conducted in Allegan, Barry, Berrien, Cass, Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, St. Joseph, Washtenaw, and Wayne counties.

Baited traps were set using a random grid method which allows trapping a larger area with fewer traps. A total of 9,136 traps were utilized. Infestations were detected in ten of the 13 counties trapped. Twenty-four additional counties were monitored for the presence of Japanese beetle by placing traps in strategic locations, such as truck and air terminals, rail yards, and recreational areas.

The infested area amounted to 3,649 acres and was treated in accordance with the recommendations of the United States Department of Agriculture. Granular chlordane was applied at the rate of five pounds per acre using hand seeders, and vehicle mounted power spreaders.

The quarantine was revised November 1, 1972, to include adjacent areas where beetles were found in Barry, Berrien and Cass counties. In all, 92 additional square miles were placed under quarantine.

JAPANESE BEETLE TRAPPING AND CONTROL PROGRAM

Region	County	No. Traps Set	Acres Treated
I	Alpena	2	
	Antrim	3	
	Benzie	2	
	Charlevoix	2	
	Emmet	17	
	Grand Traverse	1	
	Kalkaska	3	
	Manistee	3	
	Missaukee	3	
	Otsego	2	
	Wexford	6	
	Total	44	
II	Allegan	95	250
	Ionia	15	
	Kent	15	
	Mecosta	15	
	Newaygo	15	
	Ottawa	15	
	Total	170	250

Region	County	No. Traps Set		Acres Treated	
III	Bay	15			
	Lapeer	20			
	Saginaw	15			
	Sanilac	15			
	Total		65		
IV	Barry	302			
	Berrien	868		890	
	Calhoun	34			
	Cass	544			
	Kalamazoo	30		15	
	St. Joseph	494			
	Van Buren	15		—	
	Total		2,287		905
V	Eaton	27			
	Lenawee	477		123	
	Livingston	10			
	Washtenaw	448		260	
	Total		962		383
VI	Macomb	937		369	
	Monroe	605		204	
	Oakland	1,216		39	
	St. Clair	94		20	
	Wayne	2,756		1,479	
	Total		5,608		2,111
	GRAND TOTAL		9,136		3,649

VERTEBRATE CONTROL

A cooperative vertebrate pest animal control program is conducted in cooperation with the Bureau of Sport Fisheries and Wildlife, United States Department of the Interior. Information and assistance is provided to persons having wildlife depredation problems to agriculture crops.

During 1972, information and technical assistance was provided on the control of nuisance birds in corn and small fruits. Over 4,000 acres of corn were treated under Bureau supervision with Avitrol, a fright producing agent, to reduce blackbird depredation. Tests were also conducted using taste repellents to reduce bird damage to small fruits.

Time is also being spent cooperating with the Division's newly acquired Elevator Sanitation Inspection Program. Recommendations concerning bird and rodent control in these establishments are made to the managers and their pest control operators.

Starling and fish samples were collected throughout the State and submitted for the National Pesticide Monitoring Program.